



## MP2200 Non-CONTACT SURFACE PROFILING SYSTEM

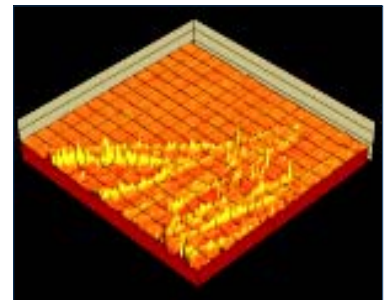
### High Resolution Surface Profiler



#### MP2200 Features:

- Nomarski Viewing System for high definition visual inspection
- Non-contact scanning line profiles
- Non-contact 3D scans
- Sub-Angstrom height resolution
- 50 nm sampling
- 0.33  $\mu\text{m}$  lateral resolution
- Scan lengths ranging from microns to 100 mm
- Profile and waviness data from a single scan
- Fast, complete circumferential scans
- Automated sample positioning X, Y, theta
- Customized measurement sequences with multiple scans implemented with a single keystroke
- Automated focus acquisition
- Closed loop auto-focus system allows focus to be maintained while scanning over samples with varying topography

**T**he MP2200 is Chapman Instruments' latest high resolution profiler. It is designed to be used as both a production tool for in-line quality inspection, as well as a research and development tool for establishing standards and researching tolerances. The MP2200 utilizes the same non-contact measurement technology as other Chapman profilers, but features a shorter wavelength light source (543 nm). This green laser allows the MP2200 to make higher resolution measurements with up to 100X magnification objectives, with a finer sampling interval (50 nm). Users can make either high-resolution radial, or circumferential scans quickly. The powerful, yet user-friendly, Windows XP based operational software can be programmed to execute a series of routines and report the data off-line for further analysis. Password security and event viewer/error logging are also available.



*A 3D scan of a asperity on a glass disk. The Ra of the disk without the asperity is 4.60 Å. The Ra in the region of the asperity is 17.18 Å.*

# MP2200 SPECIFICATIONS

## System Features

Measurement at any location on sample surface  
Integrated CCD Nomarski Viewing System  
PC Pentium computer  
Macro and template editor  
Up to 2,000,000 data points per linear scan  
Complete 360° Circumferential Scan on disk or wafer surface.  
Autofocus/Autotracking (including Opti-find™ capability)  
Programmable sample positioning  
Semi-Automated scanning of surface  
Vibration isolation table

## Performance Specifications

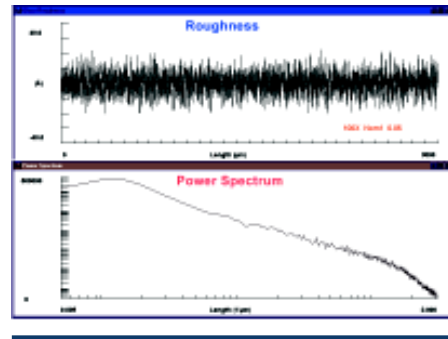
Vertical Resolution: 0.1 Angstrom  
Horizontal Resolution: 0.33  $\mu\text{m}$   
Roughness Repeatability: 2% (2 sigma)  
Scan Lengths: up to 100 mm  
X and Y Stage Resolution: 1  $\mu\text{m}$   
Theta Stage Resolution: 0.001 Degree

## Options

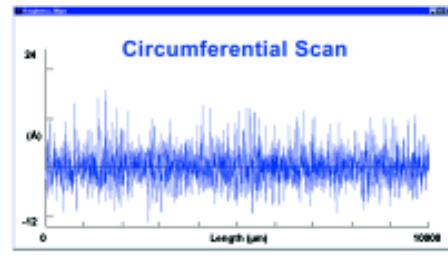
Digital Video Capture  
Color Printer  
NIST Roughness Standard

## Software

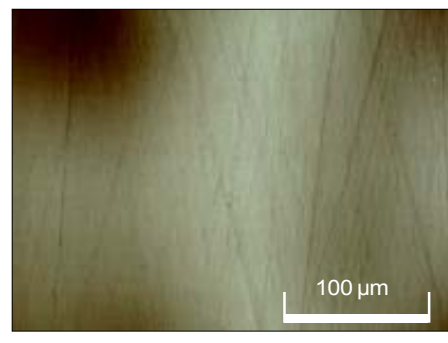
Roughness Parameters: Ra, Rq, Rp, Rv, Rpm, Rvm, Rt, Rz, Rsk, Rku, and more  
Waviness Parameters: Wa, Wq, Wp, Wv, Wt  
Other Parameters: Histogram, Cumulative Distribution, Power Spectrum, Slope, etc.  
Programmable Cutoff Filter: Conforms to ANSI B46.1 and ISO standards



This figure shows a roughness and power spectrum plot of a glass disk measurement.  $R_a=5.09 \text{ \AA}$ ,  $R_q=6.36 \text{ \AA}$ , and  $PV (R_t)=42.19 \text{ \AA}$ .



A circumferential scan of an aluminum disk.  $R_a=2.27 \text{ \AA}$ ,  $R_q=2.93 \text{ \AA}$ , and  $PV (R_t) =34.86$ .



This is an aluminum disk as seen with the Nomarski viewing system. Scratches are easily identified for further evaluation.

